

Claims

1. A dimensionally adjustable rigid structure that is collapsible simultaneously in at least two directions, said structure having:

- A. at least one pivotally connected telescoping crossed support arm assembly,
- B. each telescoping crossed support arm assembly comprising two telescoping crossed support arms pivotally connected at their point of bisection,
- C. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and
- D. each telescoping crossed support arm having a corner bracket attached on opposite sides of the midpoint on an outer telescoping section,
- E. means for locking the telescoping sections at a specified distance from the midpoint,
- F. all corner brackets on a crossed support arm assembly mounted equal distance from the midpoint,
- G. a Structure Locking Element for locking the structure in a rigid open position.

2. The invention of claim 1 wherein the collapsible structure is comprised of one or more sides with each side having four corner brackets.

3. The invention of claim 2 wherein the collapsible structure is comprised of four upper corner brackets and four lower corner brackets which create a box structure having four sides.

4. The invention of claim 3 wherein the collapsible structure is further comprised of wheels attached below each of the lower corner brackets.

5. A structure collapsible simultaneously in at least two directions comprising:

A. a frame having at least four sides, said frame including:

- i. three or more sides comprised of two crossed support arms pivotally attached to upper and lower corner brackets,
- ii. said corner brackets also attached to adjacent crossed support arms,
- iii. each of said crossed support arms pivotally connected where they bisect each other and being the same length as all other crossed support arms,

B. said structure further comprising a Structure Locking Element attached at least at all the upper corner brackets and/or all the lower corner brackets,

C. said structure further including means for preventing collapse of the structure, said means attached to at least one upper corner bracket and the lower corner bracket in vertical alignment with said upper bracket.

6. A wheeled structure collapsible simultaneously in at least two directions comprising:

A. said frame having four vertical sides: said frame including:

- i. four upper corner brackets and four lower corner brackets,
- ii. at least three sides comprised of two crossed support arms, each arm being pivotally attached to an the upper and lower corner bracket, said brackets also attached to adjacent crossed support arms,
- iii. each of said crossed support arms pivotally connected where they bisect each other and being the same length as all other crossed support arms,

B. said structure further comprising a pair of rear posts, each having an upper end and a bottom end, the bottom of each post being connected to a lower rear bracket in vertical alignment with said post; each of said posts slidably passing through an upper bracket in vertical alignment with the lower rear bracket from which the posts extends,

C. front right and left telescoping anti-torque posts, each having an upper section and a lower section, with one section slidably telescoping within the other; and wherein the right post is supported by said right lower front bracket and the left post is supported by said left lower front bracket; said posts being maintained in vertical

alignment by said brackets, and each of said posts connected to or
slidably passing through an upper bracket in vertical alignment with
said post;

D. wheel means below each lower bracket to permit the structure to be
rolled,

E. means for lifting, tilting, pushing or pulling said structure frame,

F. means connecting all upper and/or lower corner brackets to prevent
the frame from collapsing.

7. The invention of claim 5 and 6 wherein a one side is comprised of a
detachable horizontal support bar attached to the side's upper corner
brackets and a second detachable horizontal support bar that is attached
to the side's lower corner brackets.

8. The invention of claim 6 wherein the rear vertical posts are replaced by
telescoping anti-torque posts which are connected to the rear lower corner
brackets and are attach to or slidably pass through the upper corner
brackets in vertical alignment of each said post.

9. A dimensional adjustable cart frame collapsible simultaneously in at least
two directions comprising:

A. said cart frame having four sides including, a front side, a back side
and a left and right hand side,

B. said cart frame being collapsible from front to back and side to side,

C. said cart frame comprised of:

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- i. at least two opposite sides comprising telescoping crossed arm support assemblies or two opposite sides with one side comprised of a telescoping crossed arm support assembly and the opposite side comprised of either one or two detachable horizontal support bar assemblies or one or two detachable telescoping horizontal support bar assemblies, and the cart frame is further defined by,
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- ii. and two other opposite sides each having either a crossed arm support assembly, a telescoping crossed arm support assembly;
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- iii. each of said crossed support arm and telescoping crossed support arm assemblies are pivotally connected where the arms of each assembly bisect each other and all support arms are the same length when the cart is in a closed position;
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- iv. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and
- v. means for holding the outer sections of all said telescoping opposite end crossed support arm sections

on each opposite side at points equal distance from
their said pivotal connection points;

- vi. in addition the cart has four upper corner brackets and
four lower corner brackets that interconnect to form a
box shape structure and each of the support arms and
support bars is pivotally attached to a corner bracket
except all detachable ends of all horizontal support bar
assemblies,

D. a Structure Locking Element connecting all upper and/or lower
corner brackets,

E. a wheel mounted below each lower corner bracket,

10. The invention of claim 9 further comprising either rear or front left and right
vertical and/or anti-torque posts, each post having an upper end and a
bottom end, the bottom of each post being connected to a lower rear
bracket in vertical alignment with said post; each of said posts connected
to or slidably passing through an upper bracket in vertical alignment with
said post;

11. The invention of claim 9 wherein means for lifting, tilting, pulling or pushing
the structure is provided.

12. The inventions of claim 6 and 11 wherein the means for lifting, tilting,
pulling or pushing the structure is provided by either foldable or
detachable handles or a push bar attached to vertical posts or posts

created by extensions of crossed support arms extending through upper corner brackets.

13. A frame structure collapsible simultaneously in at least two directions comprising:

5 A. A collapsible frame having at least four sides:

 B. said frame further including:

- 10 i. at least three sides comprised of either a crossed support arm assembly or a telescoping crossed support arm assembly, and four upper corner brackets and four lower corner brackets,
- ii. each crossed support arm assembly or telescoping crossed support arm assembly comprised of two crossed support arms pivotally connected at the point of bisection;
- 15 iii. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and,
- iv. each telescoping crossed support arm having an upper corner bracket and a lower corner bracket pivotally
- 20 attached on opposite sides of the midpoint on an outer telescoping section,

- v. means for locking the telescoping sections at a specified distance from the midpoint,
- vi. upper and lower corner brackets pivotally attached to each crossed support arm, and
- vii. all upper corner brackets and all lower corner brackets being equal distance from the midpoint of the support arms when the structure is in the closed position,

C. means for connecting all upper corner brackets and/or all lower corner brackets to prevent structure collapse,

D. at least one Anti-Collapse Mechanism attached between vertically aligned upper and lower corner brackets.

14. A portable crib collapsible simultaneously in at least two directions comprising:

A. a collapsible crib frame having at least four vertical sides

comprising:

- i. three or more sides comprised of crossed support arm assemblies and four upper corner brackets and four lower corner brackets,
- ii. each crossed support arm pivotally connected to an upper and lower corner bracket and each said corner bracket connected to an adjacent crossed support arm,
- iii. means for preventing tipping of the structure,

- iv. each of said crossed support arms pivotally connected where they bisect each other and being the same length as all other crossed support arms,

B. a flexible Structure Locking Element attached to the upper corner brackets forming a perimeter inside the crib frame,

C. sidewalls attached to either the Structure Locking Element or at the four upper corner brackets and a flexible bottom attached to the sidewalls,

D. at least one of said sidewalls or bottom attached to at least one said lower corner brackets to create an Anti-Collapse Locking Element.

15. A play pen/bed collapsible simultaneously in two directions comprising;

A. a collapsible frame including four vertical sides having four upper corner brackets and four lower corner brackets,

B. at least one side having two equal length telescoping crossed support arms pivotally connected at their point of bisection,

C. said pair of telescoping crossed support arms is comprised of at least an intermediate tubular section and a pair of outer tubular sections telescoping opposite ends of said intermediate section,

D. a flexible Structure Locking Element attached at each upper corner bracket,

E. four sidewalls attached to the Structure Locking Element,

F. a flexible horizontal bottom attached to the four sidewalls.

16. A width and/or length adjustable portable crib collapsible simultaneously in at least two directions comprising:

A. a collapsible crib frame having four vertical sides comprising,

- i. at least two opposite sides including of telescoping crossed arm support assemblies or opposite sides with one side comprised of a telescoping crossed arm support assembly and the opposite side comprised of either one or two detachable horizontal support bar assemblies or one or two detachable telescoping horizontal support bar assemblies, and the crib frame is further defined by:
- ii. and other two opposite sides each having either a crossed arm support assembly or a telescoping crossed arm support assembly,
- iii. each of said crossed support arm assemblies and telescoping crossed support arm assemblies are pivotally connected where the arms of each assembly bisect each other and all support arms are of equal length when the cart is in a closed position;
- iv. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and

v. means for holding the outer sections of all said telescoping opposite end crossed support arm sections on each opposite side at points equal distance from their said pivotal connection points;

5 vi. in addition the crib has four upper corner brackets and four lower corner brackets that are interconnect by the combination of crossed support arm assemblies, the telescoping crossed arm assemblies, detachable horizontal support bar assemblies and telescoping horizontal support bar assemblies selected to form a box shape structure and each of the support arms and support bar assemblies is pivotally attached to a corner bracket except all detachable ends of all horizontal support bar assemblies,

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- 15 B. a flexible Structure Locking Element attached to the upper corner brackets forming a perimeter inside the crib frame,
- C. sidewalls attached to the Structure Locking Element and a flexible bottom attached to the sidewalls,
- 20 D. at least one of said sidewalls or bottom attached to at least one said lower corner brackets to create an Anti-collapse Locking Element,
- E. means for preventing tipping of the structure.

17. The invention of claim 14 and 16 wherein the means for preventing tipping comprises incorporating either Anti-Tipping Brackets into lower corner brackets,

18. The invention of claim 14 and 16 wherein the means for preventing tipping comprises incorporating a flexible Tie Down Assembly.

19. An animal crate collapsible simultaneously in two directions comprising:

A. a crate having four vertical sides including a front and back and a left and right side,

B. said crate being collapsible from front to back and side to side,

C. said crate comprising:

i. at least two opposite sides consisting of telescoping crossed arm support assemblies or two opposite sides with one side comprised of a telescoping crossed arm support assembly and the opposite side comprised of either one or two detachable horizontal support bar assemblies or one or two detachable telescoping horizontal support bar assemblies, and the crate is further defined by:

ii. and two other opposite sides each having either a crossed arm support assembly or a telescoping crossed arm support assembly,

iii. each of said crossed support arm and telescoping crossed support arm assemblies are pivotally

connected where the arms of each assembly bisect each other and all support arms are the same length when the cart is in a closed position;

- iv. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and
- v. means for holding the outer sections of all said telescoping opposite end crossed support arm sections on each opposite side at points equal distance from their said pivotal connection points;
- vi. in addition the crate has four upper corner brackets and four lower corner brackets that interconnect the support arms to form a box shape structure and each of the support arms and support bars is pivotally attached to a corner bracket except all detachable ends of all horizontal support bar assemblies,

D. a Structure Locking Element connecting all upper and/or lower corner brackets,

E. Unitary flexible sidewalls attached to each other around the entire frame and said attached sidewalls are connected to either the Structure Locking Element and/or to the upper corner brackets and/or to the lower corner brackets.

20. A playhouse or protective shelter collapsible simultaneously in two directions comprising:

A. said structure comprising:

- i. a structure having four or more vertical sides each side consisting of either a crossed support arm assembly, telescoping crossed arm support assembly, one or two detachable horizontal support bars or one or two detachable telescoping horizontal support bars,
- ii. each of said crossed support arm assemblies and telescoping crossed support arm assemblies are pivotally connected where the arms of each assembly bisect each other and all support arms are of equal length when the structure is in a closed position;
- iii. each telescoping crossed support arm comprising at least one intermediate tubular section and two outer tubular sections that telescope opposite ends into and out of said intermediate section, and
- iv. means for holding the outer sections of all said telescoping opposite end crossed support arm sections on each opposite side at points equal distance from their said pivotal connection points;
- v. in addition the structure has four upper corner brackets and four lower corner brackets that interconnect to form

a three dimensional hollow structure and each of the support arms and support bars is pivotally attached to a corner bracket except all detachable ends of aall horizontal support bar assemblies,

5 B. a Structure Locking Element connecting all upper and/or lower corner brackets,

21. The invention of claim 20 further including removable roof or dome supports attached at the upper corner brackets.

10 22. The invention of claim 20 further including a top cover either attached to the Structure Locking Element and/or the upper corner brackets.

23. The invention of claim 20 further including sidewall either attached to the Structure Locking Element and/or to the upper corner brackets.

24. The invention of claim 20 further including Anti-Tipping Brackets either with or without ground spikes.

15 25. The invention of claim 20 further including an Anti-Collapse Mechanism.

26. The invention of claims 1, 5, 6, 9, 13, and 20 wherein the Structure Locking Element is constructed of a flexible or rigid material.

27. The invention of claim 26 wherein the rigid material is in the form of a tray, shelf, or basket.

20 28. The inventions of claims 1, 5, 6, 9, 13, 14, 15, 16, 19 and 20 further including a fabric bag into which the collapsible structures can be placed for easy of storage or transport.

29. A collapsible crib frame securing mechanism for attaching a child's bed to the sleeping surface of a juvenile or adult bed comprising:

- A. means for attaching a strap, web or belt to the lower corners of a collapsible crib,
- 5 B. extending said strap from one crib corner to a mattress locking bracket or extending the strap under the mattress and back up to the opposite crib corner,
- C. means for tightening the strap to secure the bed frame to the mattress.

10 30. A method for preventing a collapsible crib frame mounted on a bed from tipping comprising,

- A. placing a collapsible crib frame on a juvenile or adult bed in the open position,
- 15 B. providing either having four upper corner brackets and four lower corner brackets of said collapsible crib frame with means for attachment to a flexible tie down assembly,
- C. attaching a flexible tie down assembly to either the collapsible crib's four lower corner brackets or the collapsible crib's four upper corner brackets
- 20 D. providing means for the flexible Tie Down Assembly to securely hold the collapsible crib to the bed frame or bed mattress such that the crib cannot be tipped or moved.